DRAFT WORKING PAPERS

Transforming Army Aviation as part of the Future Combined Arms Team

141900 December 00

Purpose

To obtain the following decisions:

- **Approve Aviation Objective Force Organizational Design**
- **Approve RAH-66 Comanche as the Multi-Role Reconnaissance and Attack System for the Objective Force**
- **Approve the Aviation Transformation Strategy and the Development of an Implementation Plan**

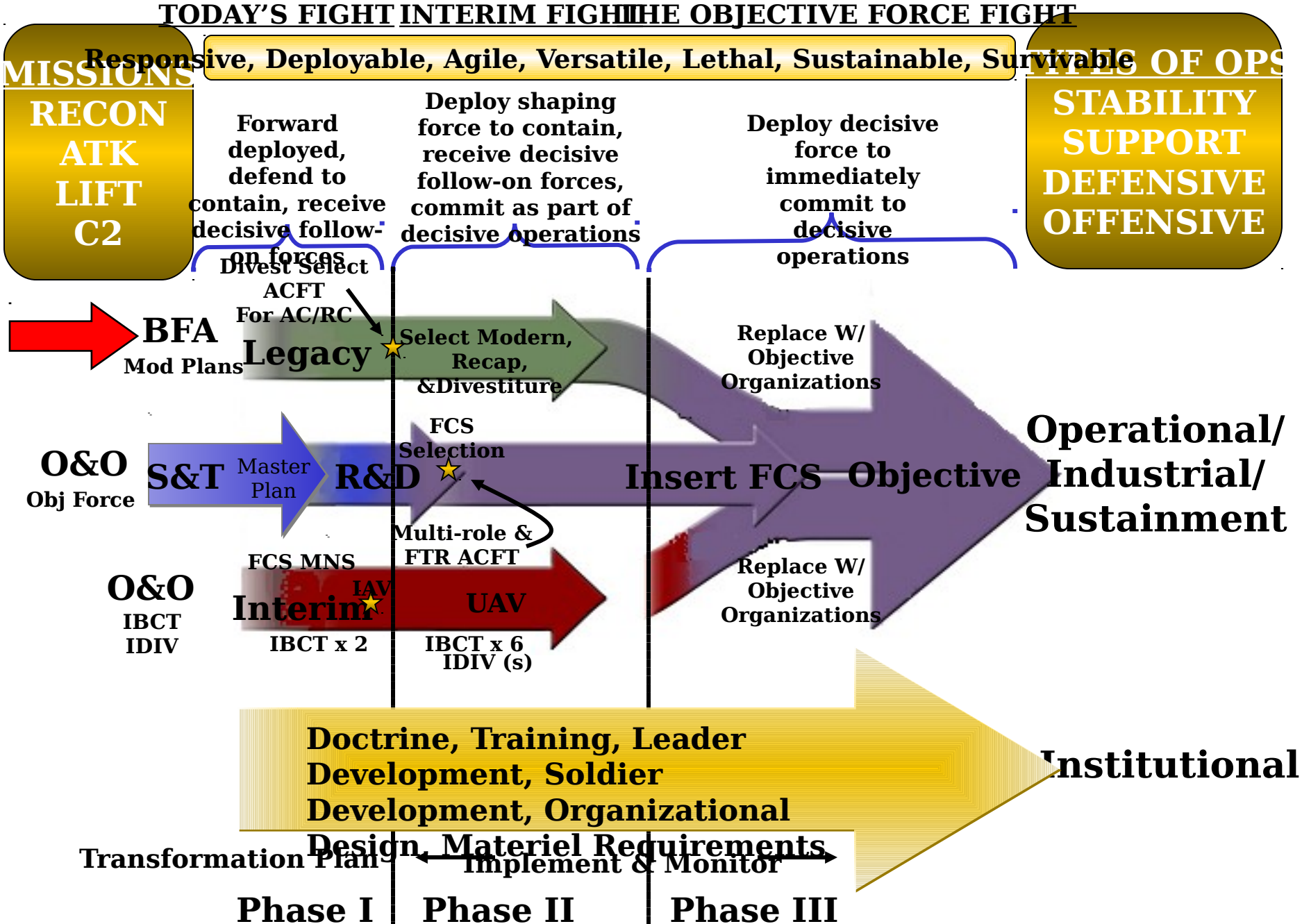
This is a Decision Briefing

Agenda

- **Aviation Mission**
- **Future Threat**
- **Objective Force Concept**
- **Transformation Strategy**
- **Aviation Issues for the Future Force**
- **Summary**

"This Is About Our Future, About Leaders and Soldiers"

Commander's Intent



The Army's Enduring Missions

ARMY MISSION

- **Fight and Win Our Nation's Wars**
- **Deter Wars and Resolve Conflict**
- **Peacetime Military Engagement to Promote Peace**

CORE COMPETENCIES (METL)

- Close with and destroy the enemy
- Respond promptly to crisis
- Conduct forcible entry
- Conduct sustained land operations
- Mobilize the Army
- Shape the security environment
- Provide support to civil agencies

In a Joint and Combined Environment

Aviation Enduring Missions

- **Reconnaissance / Security**
  - **Route, Zone, Area**
  - **Develops the situation rapidly, increased capability with air-ground team**
  - **Combined arms force for guard and cover missions**
- **Attack**
  - **Destruction of the enemy at decisive points**
  - **Integrated in combined arms scheme of ma**
- **Air Assault / Air Movement**
  - **Rapid mobility for light forces - negates effec terrain**
  - **Seize key terrain, gain positional advantage**
  - **Aerial sustainment**
- **Command, Control, and Commu**
  - **Airborne transmission or relay**
  - **C2 over extended ranges**

(FM 1-100 *Aviation Operations*)

Saudi – DESERT STORM
Panama – JUST CAUSE
Grenada – URGENT FURY
Somalia – RESTORE HOPE
Haiti – UPHOLD DEMOCRACY
Bosnia – JOINT ENDEAVOR

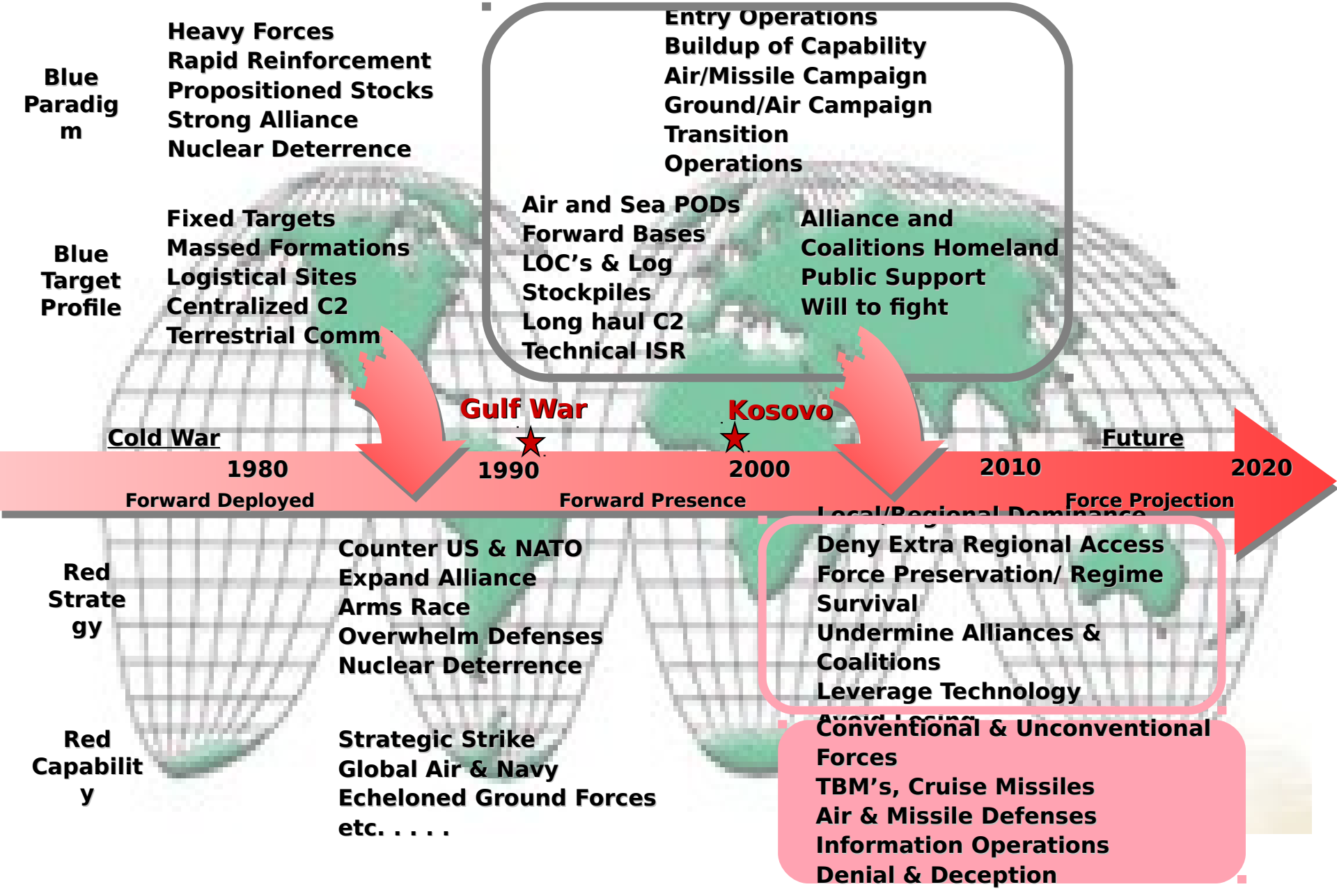
Provides the commander with multi-dimensional combined arm

Aviation - A Member of the Combined Arms Team

- **A Key Component of Doctrine -- Adds Precision Fires and Maneuver to the Combined Arms Team**
- **Vertical Dimension of the Combined Arms Team -- Enables Precision Maneuver Unconstrained by Terrain**
- **Provides Complementary and Reinforcing Fires for Mutual Support in Shaping, Decisive, and Sustainment Operations -- at the Critical Place and Time**
- **Provides an Asymmetric Capability to Combined Arms CDR**

This is Why We Have <u>Army</u> Aviation...

The Changing Strategic Paradigm



General Air Defense Trends

WHY IT'S CHANGING


Multi Function Missile Systems


ADA/SAM MIX


Millimeter Wave Radars


Multi-spectral Sensors

Improved Munitions



ATTACK HELICOPTER


AIRCRAFT

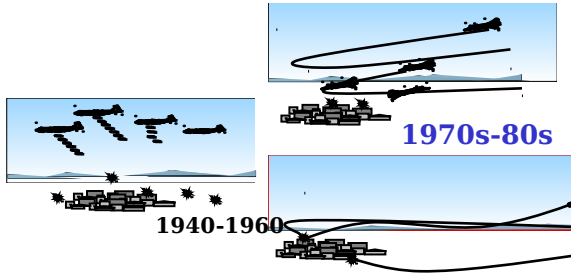
High

Proliferation Trends

Low

TODAY 2000 2015

Applying Lessons Learned… Adoptive and Adaptive



INCREASING RISK TO US FORCES

Emerging Capabilities

Multi-spectral sensor integration

NOE/OTH Radar capability

Integration of gun and missile

Advanced munitions

Enhanced targeting

Emerging Strategies

Opportunistic in nature

Redundant C3I

Dispersed, Integrated, and Decentralized engagement

Mixed automated and manual tracking-- win war of weather

Maximum use of complex terrain

Non Traditional Air Defense Employment … Air Defense Ambush

EVOLUTION CHARACTERIZED BY CHANGE IN THE TARGET SET

A Look At Specific Vulnerabilities

MANPADS

- **Many Need 15 Degree Elevation**
- **Acquisition Through Narrow Field of View, Must Get Lock On Target**
- **Limited Battery Life**
- **Limited, but improving Night Sight Capability**
- **Most Effective When Cued from Early Warning**
- **Range: 6 Km with Well Trained Crew, Clear Target ID**

CREW-SERVED WEAPONS

- **Depends On Early Warning**
- **Engagement requires LOS**
- **Limited Range**

SELF-PROPELLED SYSTEM WITH ON-BOARD ACQUISITION

- **Thin-Skinned**
- **Radar/Optical Acquisition, Low Probability of Detection,**
- **Radar Gives Position Away**
- **Most Effective When Cued by Early Warning**
- **2500-4000 Meter Range (guns), 8 (10) km w/SAM**

INTERMEDIATE SAM SYSTEMS – SA-9/SA-13

- **SA-13: IR Seeker, Has Range Only**
- **SA-19: IR Seeker, possible laser**

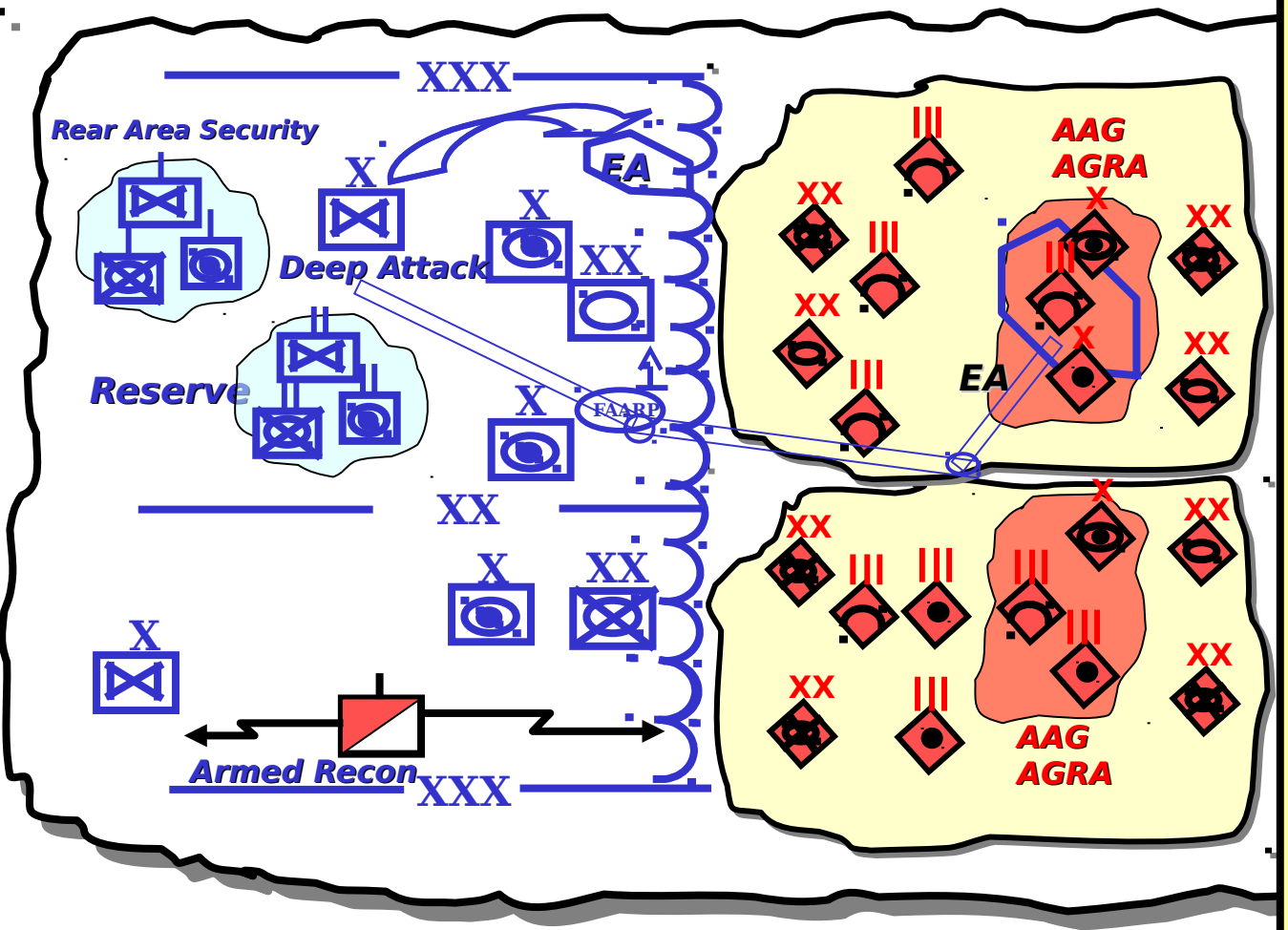
ANTI-HELICOPTER MINES – UNDER REVIEW

- **Range: 200 meters effective range (RS)**
- **Acoustic Sensor: Can Detect Within 1000 Meters (Weather Dependent)**

Terrain

Yesterday….Today

Defensive… Counterattack **Offensive**



Roles

- Deep Operations
- Close Air Support
- Lift/Air Assault
- C2

Conditions

- Linear Battlefield
- Rear Areas (Sanctuary)
- Massed Formations
- Defensive ADA
- Area Lethal SEAD possible

Threats

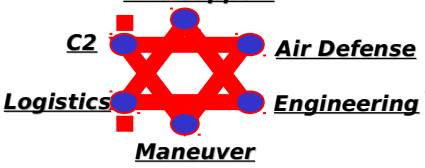
- Air/Missile Attacks to Airfields
- SOF Attacks/WME
- Artillery/Rocket Attack to FARP
- IAD- Protecting Targets and Along Routes
- EW- Jamming Coms, Radars and GPS
- EMP
- Conventional, Non-Air

Today…Tomorrow

Offensive **Defensive**

Recon Fires Complex
Recon Strike Complex
Military Systemology

Military Systemology



Attack and Destroy System to Achieve Dominance

Roles

- Deep Operations
- Close Air Support
- Lift/Air Assault
- C2

Conditions

- Non-Linear Battlefield
- No Rear Areas (No Sanctuary)
- Offensive ADA
- Dispersed Targets
- Expanded ISR
- Precision SEAD Required

Threats

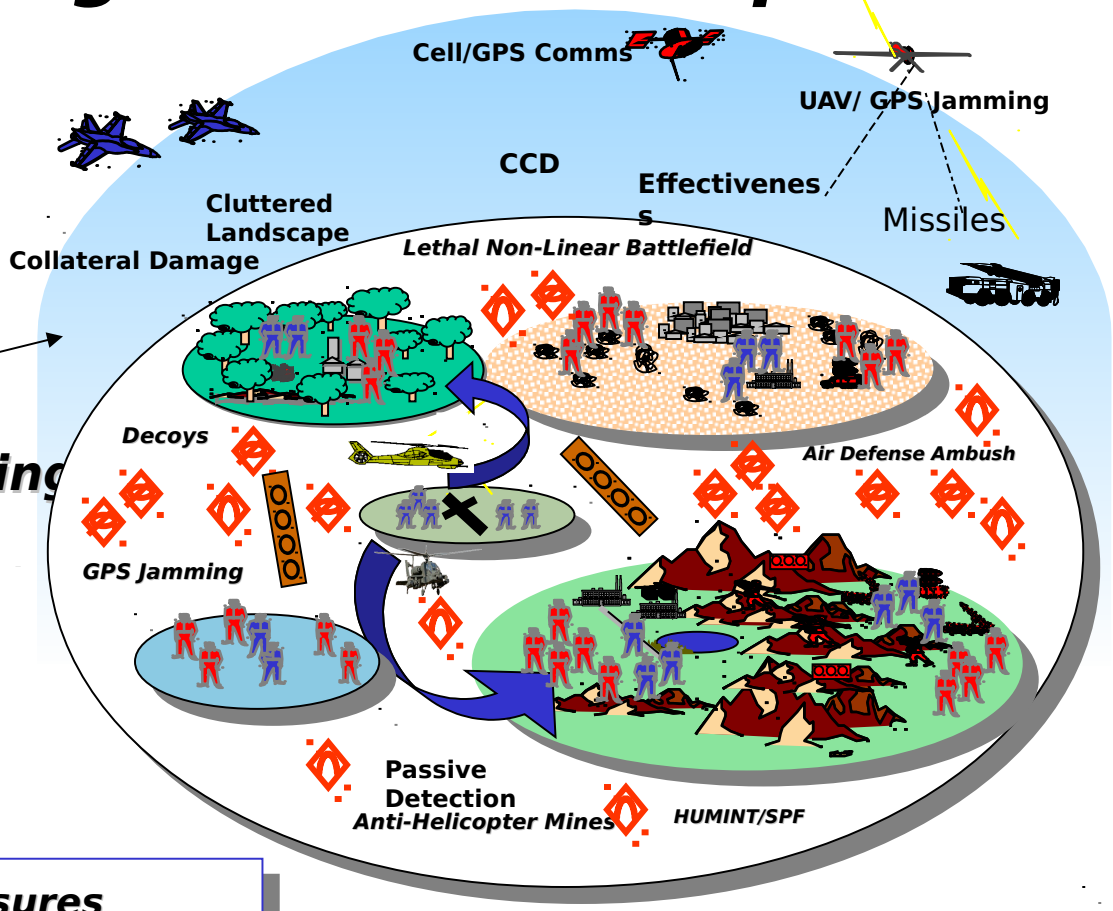
- Air/Missile Attacks
- WME
- Direct Fires
- SOF
- Artillery/Rocket Attacks
- Passive Sensors
- EW, Jamming Coms, Radars and GPS
- EMP

Changing Threat Battlespace

Blue Fixed Wing Response

- Altitude
- Speed
- Countermeasures
- Fixed Targets

..creates a gap in supporting the close fight



Blue Rotary Wing Response

SA/SU	Countermeasures
Combined Arms	Proactive, Precision SEAD
MuM Teaming	Precision Fires & Maneuver
	TTP

= Responsive, lethal, dedicated Aviati support to dominate the threat

Rotary Wing Aviation fills the gap … provides close air support to the ground commander

Aviation Implications

Aviation Operational Environment Highlights:

- **A wider spectrum of operations, increased threat technological capability and unpredictability leading to a more complex and challenging range of operating environments . ….and an**

Adaptive and Adoptive Threat creates…..

- **A Challenge for Independent Maneuver**
- **Suggest a Combined Arms Approach**
- **Extremely lethal, offensively oriented air defense environment**
- **Degradation of U.S. technological superiority**
- **Changed target sets**
- **Challenges US preferred method of Warfare…. Standoff, Precision, Attack**

Emerging Military Capabilities

Urban/Complex Terrain

Asymmetric Threats

Emerging Military Strategies

Threat Assessment

- **Restricts Freedom of Maneuver in Single Dimensional Operations**
- **Mixture of High Tech, Hybrid and Conventional Capabilities**
- **Maximizes Cover, Camouflage and Deception**
- **Fights on Own Turf, Knowledge of Terrain and LOC's**
- **Le**

BOTTOM LINE: Not Just an Issue for Army Aviation, It is a Combined/Joint Force Issue

Av ill:

Execute the enduring missions in support of Commander's scheme of maneuver in Joint and Combined arms environment from early entry to sustained operations as a Combined Arms team member…

Specifically:

- **Provide agility, lethality and responsiveness throughout depth of battlespace**
- **Provide direct fires and maneuver unconstrained by terrain through mutual support of ground forces**
  - **Create Overmatch with reinforcing combat power through fires and maneuver**
  - **Force enemy into multi-dimensional fight**
  - **Orchestrate direct and indirect fires to force enemy from position of strength**
- **Shape and isolate decisive operations**
  - **Deny enemy freedom of movement**
  - **Provide cognitive man-in-the-loop C2 to acquire, fix and destroy targets**
- **Target acquisition and precision fires at extended ranges**
- **Vertical dimension of Combined Arms Team**

This is Why We Have Army Aviation…

Objective Force Concept

Objective Force Facts and Assumptions

Facts:

- **Aviation Will Transition As An Integral Part of Army Transformation**
- **S & T Programs Will Continue to Leverage Technology to Develop the UAV and the Future Transport Rotorcraft**
- **Current Organizational and Manning Deficiencies in the Total Force Must Be Fixed**
- **Recapitalization Program is Essential for Reliability Improvements**
- **Leader/Soldier Development Programs are Key to Future**

Assumptions:

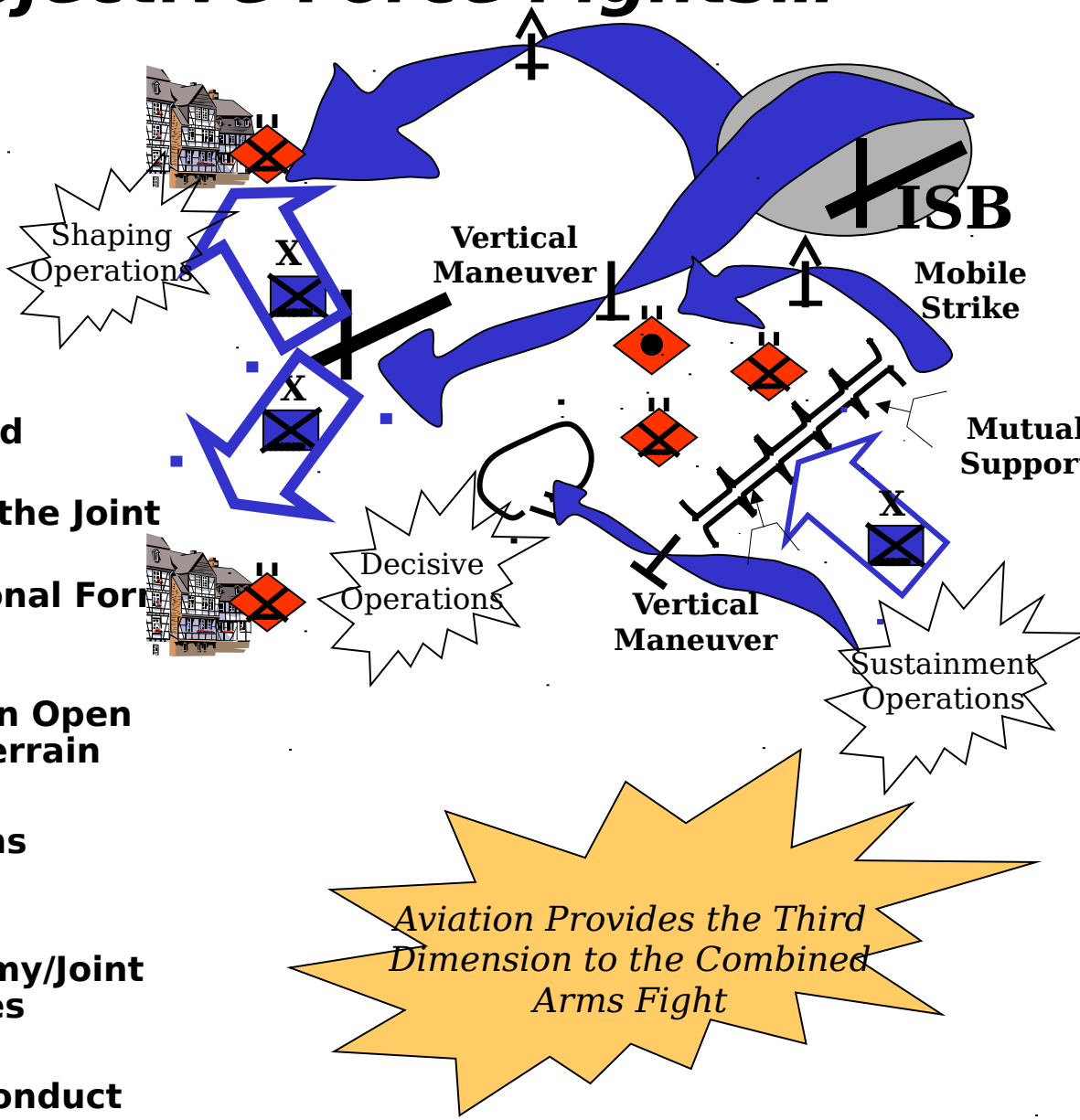
- **Future Threat Environments Will Mature As Forecast**
- **Doctrinal Development Will Meet Transition Timelines**
- **Training and Logistics Systems Will Be Re-engineered to Support Transition**
- **Increased Resources Will Be Available to Move to the Objective Force**
- **Reorganization and Manning the Force Must Be Achieved within BFA**
- **AH-64D Longbow Apache Selective Upgrade Will End in FY 06**

How the Objective Force Fights…

The Army Objective Force O&O Tells Us…

WARFIGHTING FOCUS

- **Operational Movement and Maneuver**
  - **Extends the Reach of the Joint Force Commander**
- **Tactical Maneuver/traditional Forms of Maneuver**
  - **Will greatly Expand Engagement Ranges in Open and Urban/Complex Terrain**
- **Vertical Envelopment**
  - **Unique Combined Arms Operation**
- **Mobile Strike**
  - **Exploits Advanced Army/Joint Aviation and Joint Fires**
- **Close Combat**
  - **Where Army Forces Conduct Decisive Combat Action**



How Aviation Fights in the Objective Force…

Aviation Warfighting Focus…

Combined Arms Synergy in the Warfight

Operational and Tactical Maneuver
- **Adds Third Dimension and High Tempo**
- **Precision Fires, Precision Maneuver**

Reconnaissance and Security
- **Maximize Manned and Unmanned teams of Commanche and UAV**
- **Integrated C4ISR, Continuous SU/SA**

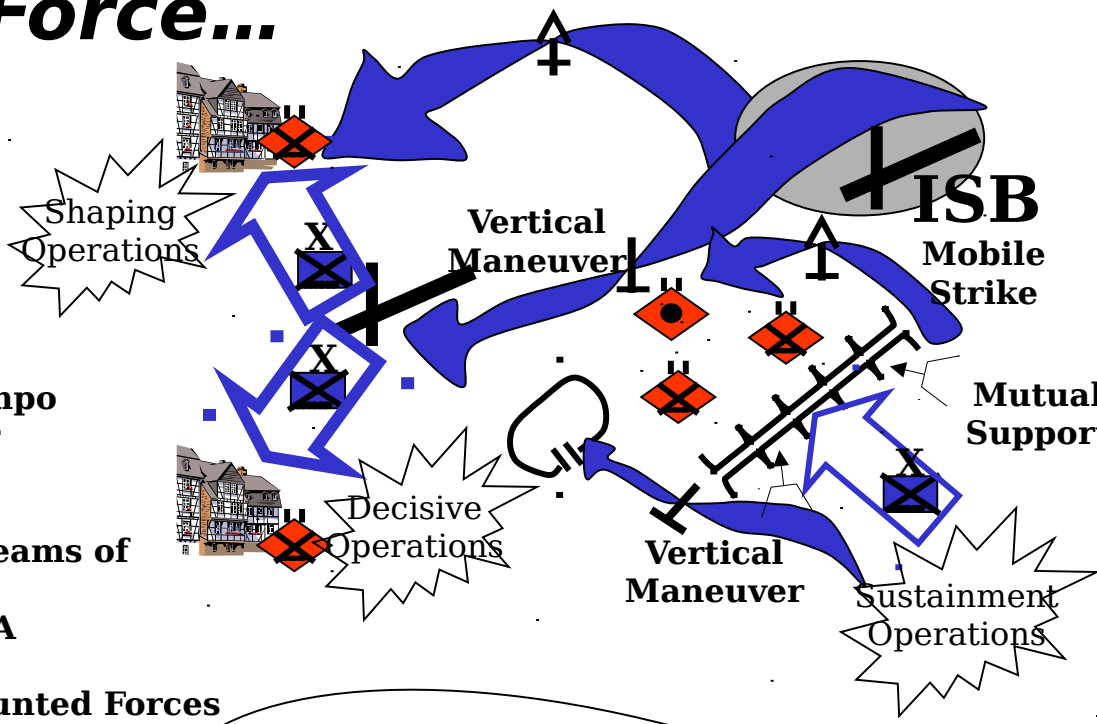
Vertical Maneuver with Mounted or Dismounted Forces
- **Using FTR and Organic Lift Assets**
- **Negate Effects of Terrain, Gain Positional Advantage**

Mobile Strike
- **Deliver Precision Fires with Standoff**
- **Armed UAV, Manned/Unmanned Teaming**
- **Provide Improved Situational Awareness**

Mutual Support in Decisive Operations
- **Close Fires in Red Zone Fight**
- **Increased Agility with Netted ISR**

Sustained, Simultaneous and Sequential OPS in Non-linear Environment

Provide Enhanced C2 for Ground and Aviation Forces



Effects on the Enemy Force

- ***Denied Freedom of Maneuver***
- ***Isolate Enemy Force***
- ***Must Fight in Multiple D***
- ***Disrupt C2 and Logis***

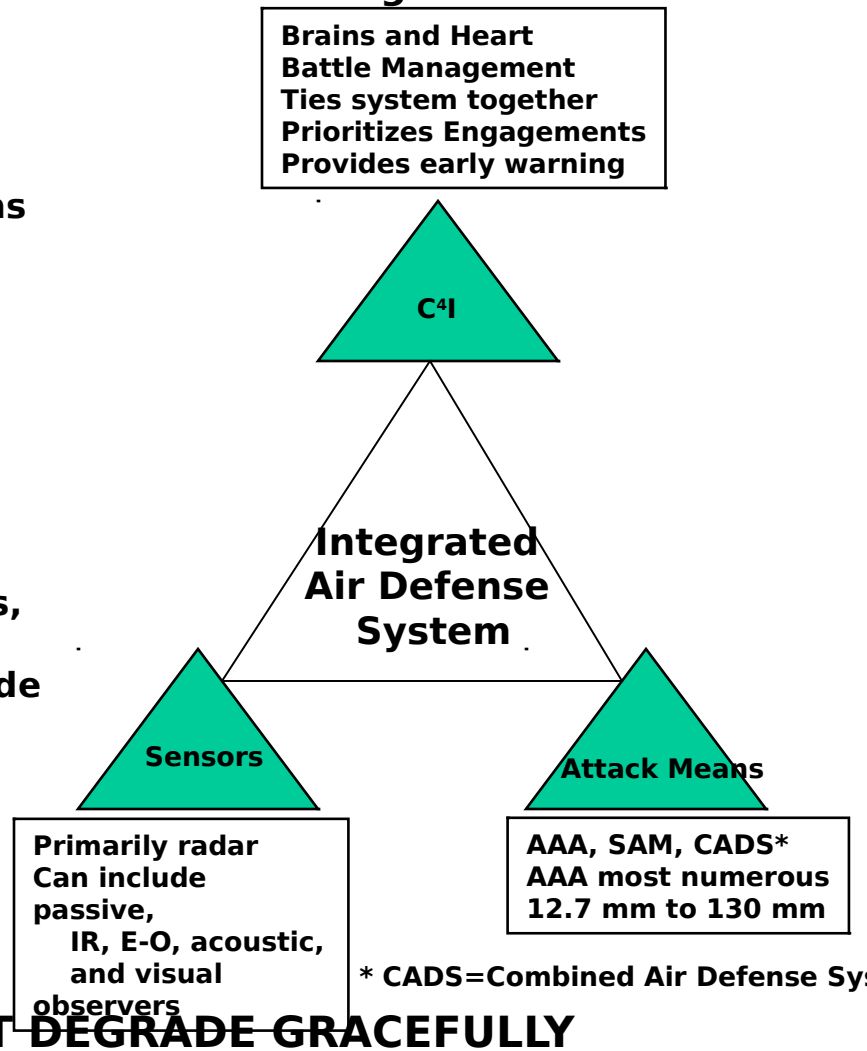
Executing the Mission in the Future Environment

- **Army Aviation is not a stand-alone force, but a member of the Combined Arms Team.**
- **Situational awareness is essential to combat effectiveness and survivability.**
- **We will use all means available (national, strategic, tactical) to plan missions.**
- **SEAD is always a mission planning consideration, using organic or joint assets against priority threats.**
- **Enhanced aircraft survivability technology will increase combat effectiveness and staying power.**
- **Improved survivability is designed against the current and future threats.**
- **Know Your Enemy – Training and Leader Development remain essential to mission success.**

Neutralizing IADS

- **Identify and locate C⁴I nodes. (UAVs, feints, recon, national assets)**
- **Destroy nodes using all available combined arms assets.**
- **Use joint service assets beyond combined arms capability.**
- **IADS effectiveness is maximized using centralized control. Destruction of C⁴I nodes hastens advent of decentralized control (autonomous operation).**
- **This will force radar equipped AD weapons to utilize on-board radar thereby betraying their location. This will allow engagement or avoidance.**
- **Eliminates cueing to optically control weapons, ie MANPADS, AAA, crew-served weapons, etc.**
- **Best solution is to destroy an IADS. C4ISR Node effectiveness remains a well planned nap-of-the-earth mission based on sound, valid intelligence.**
- **Can Reduce Effectiveness with Well Planned Mission, Based on Sound, Valid Intelligence.**

SYSTEM
Communications/data dependant
Built-in redundancy
Protected against destruction



A REAL WORLD IADS WILL NOT DEGRADE GRACEFULLY

Meeting the Challenge (Offense)

Detection

Target and ID

Utilize Joint/Combined Arms
- Lethal and Non-Lethal
- SEAD Against C2 Nodes

Maximize the Use of Night and Low Visibility Conditions

Use Deception/Feint to Cause Early Exposure

Exploit UAV Capabilities - Manned and Unmanned Teaming

Know the Enemy - Full SU/SA

Leverage Technology for LO, Acoustics, Precision Fires

Engagement

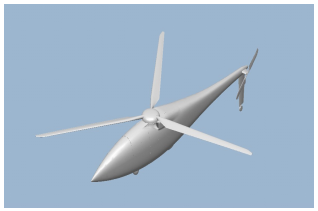
Leverage Combined Arms Precision Maneuver and Precision Fires

Engage w/Lethal UAV, Standoff Precision Fires

Deny Weapons Capabilities w/Speed, Maneuver and TTP

Attack w/Multiple Capabilities

Simultaneous Ground and Air Operations For Multiple Dimension Overmatch



Survivability

Training and Leader Development

Redundant Capabilities

Mass only in Permissive Environment

Maintain Dominance in Combined Ar Capabilities

Meeting the Challenge (Defense)

<u>Detection</u>

Mission Planning System
Situational Awareness
TTP (NOE, night, adverse Wx)
UAV Teaming
Reduced Signatures (IR, RF, acoustic, aural)
SEAD
Advanced Pilotage
Radio Frequency Interferometer
Multi-Spectral Targeting (Standoff)
Aided Targeting
Fire & Forget Weapons
Common Opnl Picture

<u>Engagement</u>

Reduced signature
Warning Receivers (laser, radar, NBC, Msl launch)
RF Countermeasure Suite
IR Countermeasure Suite
Agility & Maneuverability
Situational Awareness
Chaff
Flares
TTP

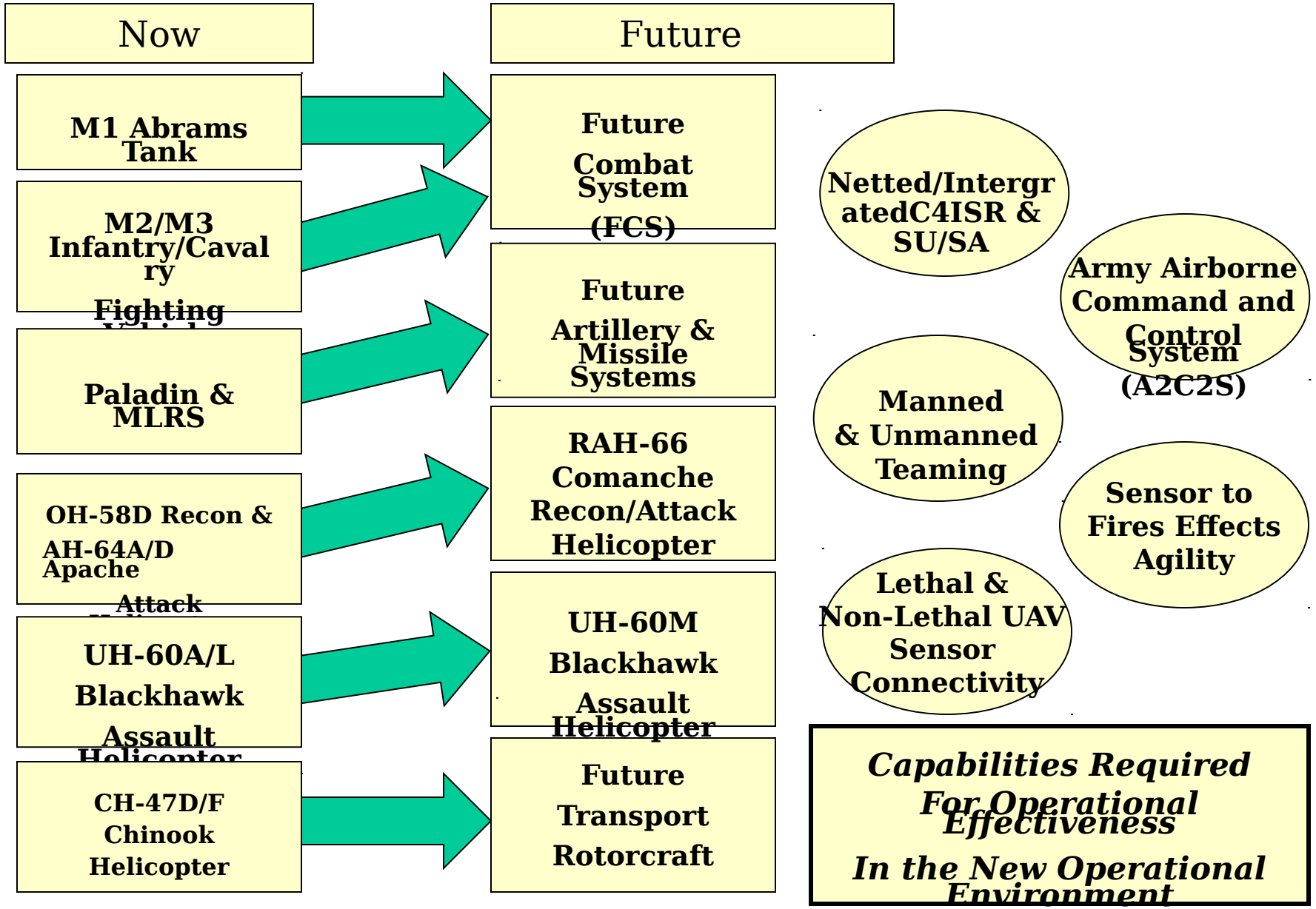
<u>Damage</u>

Ballistic Hardening
Systems Redundancy
Modular Components
NBC Hardening
Laser Hardening
E^3 Hardening

<u>Survivability</u>

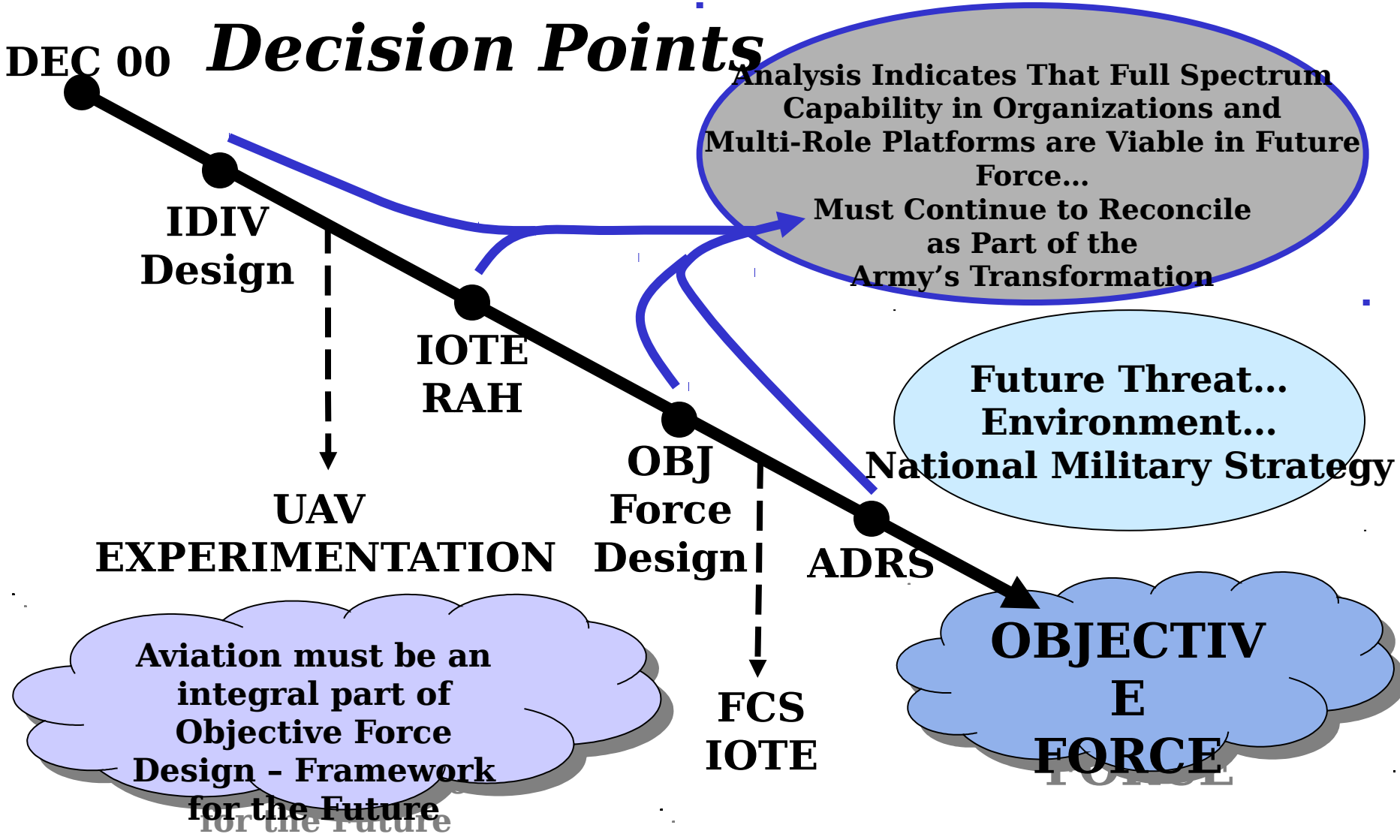
Air Warrior System
Crashworthy Fuel Systems
Crashworthiness
Autorotation Capability
Survival Radios

Key Future Operational Capabilities



Objective Force Concept.....

Continue to Reconcile Within Army Transfo



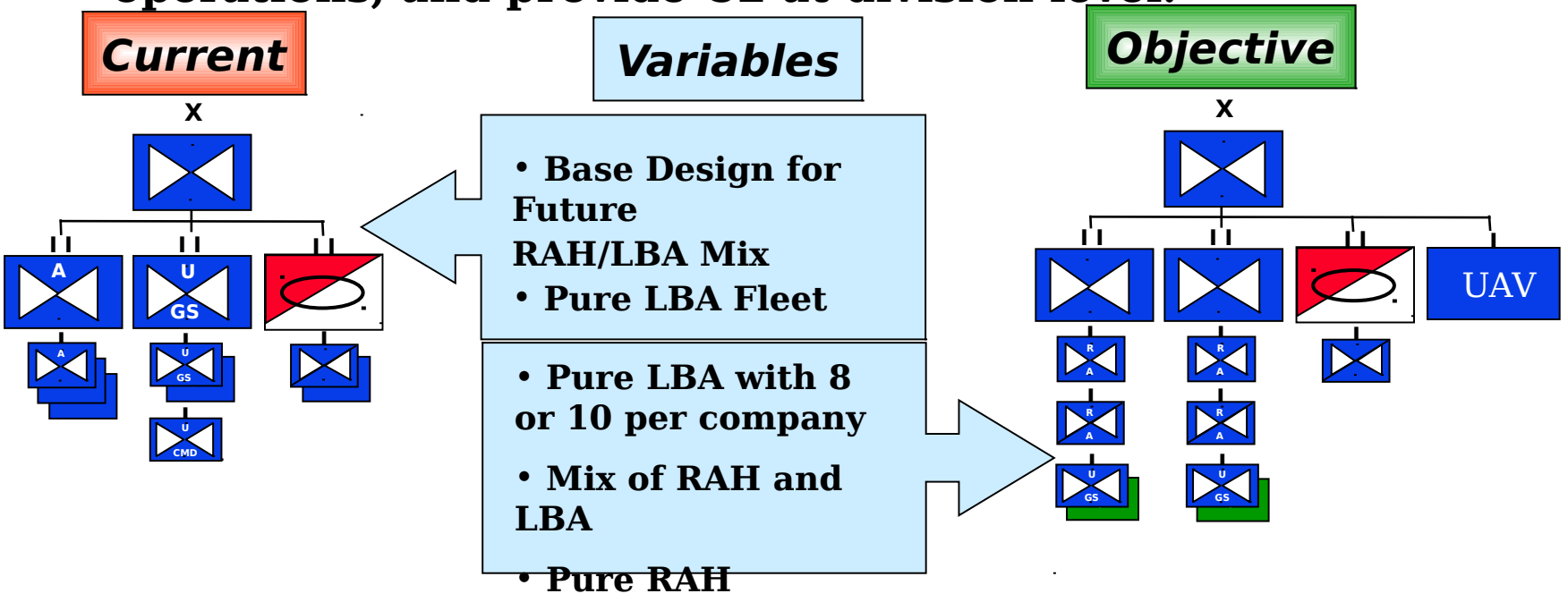
Decisions

1. **Approve Aviation Objective Force Organizational Design**
2. **Approve RAH-66 Comanche as the Multi-Role Reconnaissance and Attack System for the Objective Force**
3. **Approve the Aviation Transformation Strategy and the Development of an Implementation Plan**

Organizational Warfighting Lens Analysis

BLUF: Comparison of pure fleet ARI design vs. a multi-functional design at Division/Corps

Force Allocation: Comparative analysis focused on recon/attack capability to meet shaping mission and decisive operations requirements. Lift and C2 capabilities focused on general support at Corps to organic support at division through embedded capability in each battalion. Lift mission capability retained to move one infantry company, conduct sustainment operations, and provide C2 at division level.



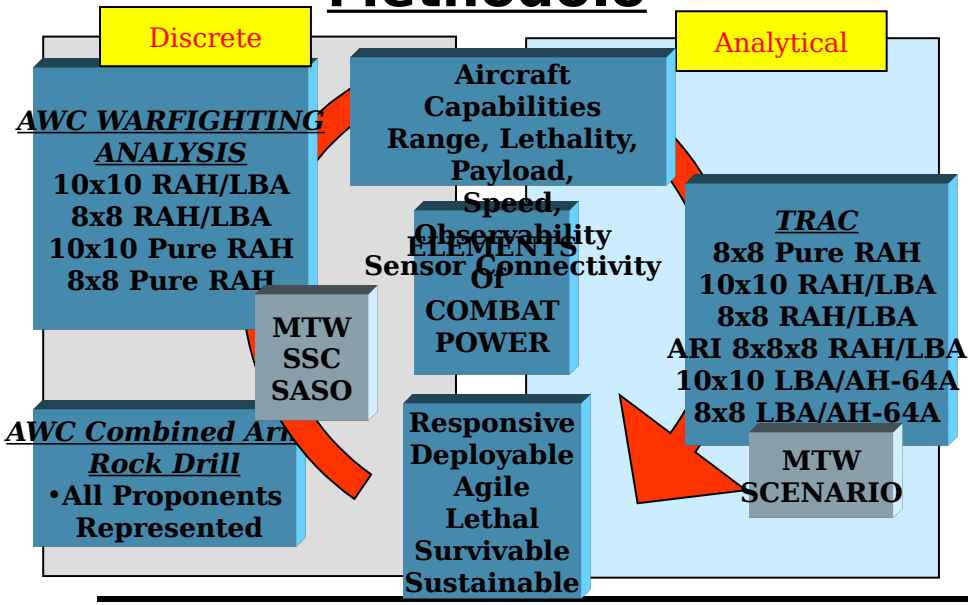
Organization Comparison

	MFB	ARI
Corps	• Full spectrum operations capable • Increases agility/sustainability/versatility • Lethality maintained by Future System • Unit of maneuver - battalion • Unit of action - company/troop vs Battalion • Greater Number of Mission Capabilities • More Generation of Combat Power • Increases Capability for Simultaneous and Sequential Operations	• Status Quo • Must be task organized for Full Spectrum Ops • MTW centric • Maintains additional Avn Bde HQs at Corps • Keeps LUH Bn and Corps utility organization- Status Quo – Issue for UH-1 Divestment • Unit of maneuver - brigade • Unit of action – battalion, Decreased Flexibility • Develops Single Purpose Leaders
Division	• Full spectrum operations capable at Bn level • Provides more efficient use of resources • Complements Objective Force Multi-Functional design at battalion level • Achieves objective force characteristics in versatility, agility... • Combines utility/attack/recon into 2 M •	• Single Ask Brigade Corps capability for both shaping/decisive ops • Requires task org of lift assets to support multiple operations • Retains MTW focus • Retains full air assault capability • Keeps utility/attack assets separate • Division CDR Normally Maintains

Objective Force Design = Full Spectrum Ops

Course of Action Warfighting Analysis

Methodolo



Conditions

- Advanced air defense threat in all scenarios.
- Enhanced C4ISR integration in all scenarios.
- MFB = 2 per Division (in Aviation Brigade)
- Modeled in MTW to stress organization.
- Typical missions: close combat & mobile strike.
- All operations in combined arms/joint context.
- Effective CSS accomplished regardless of organizational design.

Conclusions

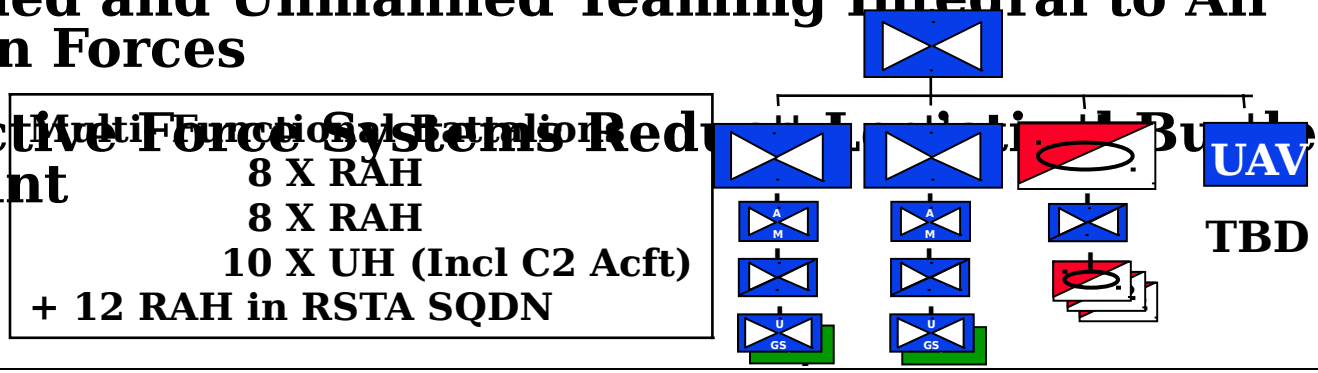
- 8 x 8 MFB (pure RAH-66) and 10 x 10 MFB (RAH-66/AH-64D) had comparable levels of mission success (LER and FER similar)
- 8 x 8 MFB assumes risk in the ability to conduct simultaneous shaping and close combat operations at Division level. Can be mitigated with Corps augmentation and by keeping the number of units of action (Companies per MFB) and units of maneuver (MFBs per Division) constant.
- Army Aviation shaping operation
  extended with ATACMs Block II a
- Shaping operations continue to
  successful close fight.

Multi-functional organizations will be successful in the Objective Force

Decision #1

Aviation Organizational Design for the Objective Force

- **Aviation Brigade Designed for Full Spectrum Operations**
- **Multi-Functional Bn Design Fully Modular, Tailorable, and Agile**
- **TRAC and SME Analysis Confirms Capability to Perform Missions Against Advanced Threat**
- **Manned and Unmanned Teaming Integral to All Aviation Forces**
- **Objective Force Systems Reduce Logistical Burden and Footprint**



***Recommendation*: Approve Aviation Organizational Design for the Objective Force**